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Development of Cotton Varieties for Cultivation in Narrow Rows.

With the aim of finding the best productive results maintaining low production costs, cotton systems in Argentina have had many changes. Cotton planting in high density, with rows spaced by less than a meter, is a high-impact practice. This method was incorporated in recent years by Argentine farmers. Novik et al. (1991) reported increases of 30% for fiber production in narrow rows systems. Philip et al (2001) observed 22% yield increase as a consequence of reducing the space between rows from 1 to 0.52. The latest results were obtained in limiting conditions for grown.

The correct choice of varieties with better adaptation to high-density systems allows to explore better performances. Kerby et al. (1990) determined that the increases in yield were lower in tall varieties with a more indeterminate growth. Philip et al (2001) mentioned in their reviews that certain varieties which initiated the first fruiting to a greater height, did not increase their precocity and decreased the ratio of reproductive-vegetative growth. It stresses that there is a differential behavior in morphogenesis in different genotypes.

Silva et al. (2001) found differences in the behavior of varieties in relation to distance and densities. This fact demonstrates that it is possible to select materials with better performance in these systems.

Coffey et al (1989) evaluated the inheritance of fruiting habit of known genotypes cluster for this feature. They, when growing in high density, generate shorter fruiting branches and allow the harvest with stripper-like systems, incorporating fewer impurities in the fiber. It increases the commercial grade in these conditions.

The sources of variability to start breeding programs contain compact genotypes, which are characterized by increased harvest index, lower height and shorter branches.

The breeding program of INTA uses these individuals, in order to obtain lines with better adaptation to crops in narrow rows. Also these characteristics were obtained in elite cultivars through mutation induction.

The available varieties in Argentina come from two sources: INTA (National Institute of Agricultural Technology) and Delta Pine Land (Monsanto). In general, these materials have intermediate or short-cycles, but they have not been selected for high-density systems because they differentiate much more vegetative branches than varieties suitable for narrow rows.

INTA recently released PORAITE INTA, called experimentally SP 33950 SN. It is characterized as a variety of short course with high production potential and ginning percentage, between 39 and 40 percent. Fiber technology is 29 mm in length and 30 gr / tex, with micronaire of 4.2 (Table 1). Considering disease behavior, It maintains high resistance to bacterial blight (*Xanthomonas axonopodis pv Malvacearum*) and blues disease (*Cotton leafroll dwarf virus CLRDV*).

This material has very good adaptation to the narrowing between rows, because its size is intermediate to low, and the differentiation of vegetative branches is small in relation to other varieties.

It is widely known that pest control should be stricter in shorter flowering crops, for attaining the best results. Nowadays in Argentina, transgenic varieties are broadly used, and, under certain conditions can reduce the leakage caused by insect pest. The incorporation of insecticidal genes through transformation techniques is also part of medium and long term plans of INTA. In this regard, there is a technology agreement between INTA and several provinces (Chaco, Santiago del Estero, Formosa and Santa Fe), which has been initiated with the preparation and characterization of genes with insecticidal properties for boll weevil *Athonomus grandis* B. In addition, other techniques are being developed based on silencing of genes involved in essential functions of pest insects. Moreover, it is necessary to generate knowledge regarding the use of resources in environments with irregular weather conditions, especially amount and distribution of precipitations. Sekloca et al (2007) observed that a variety of intermediate cycle, Guazuncho 2 INTA, achieved the best results undermild water stress. Understanding these processes allows the design of genotypes with better adaptation to changes in the environment.

Finally, it is noted that in obtaining cotton varieties, the further development of other disciplines such as Eco-physiology, crop management, plant pathology, entomology and weed control is comprised. It allows adjustments in the use of different varieties.

Table1. Evaluation of several cotton varieties at 4 locations in Argentina during 3 crop years (2003/04; 2004/05, 2005/06).

			Fiber Properties				
	Lint Yield	Lint Turnout	Length	Length Uniformity	Strength	Elongation	Micronaire
	Kg/ha	%	mm	Ind.	g/tex	%	Ind.
CACIQUE INTA	959,90	38,93	28,29	83,99	29.06	6,68	4,5
PORAITE	942,52	39,68	29,31	85.18	32,31	7,03	4,21
GUAZUNCHO 3	940,75	39.84	29,23	85,22	31,98	7,22	4,29
LA BANDA 300	912,94	37,48	28,66	84,48	31,51	7,25	4,46
PORA INTA	897,54	38,69	28,20	83,96	28.41	6.68	4,58
CHACO 530	880,33	37,45	29,74	84,59	31,43	6,58	4,25
OROBLANCO 2	767,88	40,37	27,97	83,91	30,43	7,03	4,2

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